VILLAGE OF NEW HAMBURG

PROJECT NO. 60 - S - 56

ANNUAL REPORT

1964

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May, 1965

Prepared by:

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HISTORY

The Village of New Hamburg first approached the Ontario Water Resources Commission in October, 1957, to obtain technical assistance and advice in dealing with its disposal and pollution problems. As a result of this request, the Ontario Water Resources Commission first met with the Village in February, 1958.

In May, 1960, the consulting firm of Wagner, McCarger and Filer was engaged by the Ontario Water Resources Commission to design sewage works for the Village of New Hamburg. This firm, during the design of the project, changed its name to McCarger, Filer and Hachborn.

The agreement between the Village and the Ontario Water Resources Commission to finance, construct and operate the project was signed in May, 1960.

Construction of the sewage works began in September, 1961. The project was constructed by Cornell Construction Company.

The project has been in operation since August, 1962. Since the start-up time, neither the pumping station nor the waste stabilization pond has been enlarged.

The total cost to construct and design the sewage works was $465,281.

DESCRIPTION OF PROJECT

The Village of New Hamburg is served by approximately 29,500 feet of sanitary sewers, varying in size between 8 inches and 18 inches, together with service connections and appurtenances.

The sewage collected by this system flows by gravity to the wet well connected to a Babcock-Wilcox and Goldie-McCulloch,Limited, prefabricated underground pumping station. The pumping station, located at Jacob Street and Bleam's Road, discharges the sewage through approximately 10,000 feet of 10 inch transite force main to a 14 acre waste stabilization pond.

The pumping station is equipped with two centrifugal sewage pumps with an automatic control system, electrical switch gear, heater, dehumidifier, exhaust blower and sump pump. All of this equipment operates automatically and apart from maintenance repair, requires periodic inspection to assure successful operation. In the event of an emergency, an over flow from the wet well to the Nith River has been provided. The pumping station is also equipped with an alarm system. In the event of a pump failure, a rise in level in the wet well will, set off an alarm in the New Hamburg fire station.

Oxygen in the pond is supplied through photosynthesis of a family of simple plants collectively termed algae and by absorption from the atmosphere. Aerobic (oxygen using) bacteria in the pond break down and stabilize the organic

matter.

When the pond surface is covered with ice and snow, free oxygen is not available. Anaerobic (non-oxygen using) bacteria and sewage fungi thrive under these conditions and the sewage becomes what is characteristically referred to as septic. During the spring ice break-up period when conditions are changing from anaerobic to aerobic, septic conditions prevail.

With aerobic treatment, the pond effluent should have a greenish colour indicating the presence of algae.

Effluent from the pond flows to an outfall chamber where the pond depth is controlled by a stop log weir. From the outfall chamber, effluent is conducted via 170 feet of 15-inch concrete pipe to a tributary of the Nith River.

Design data and a diagram of the waste stabilization pond system are appended in Appendices F and G respectively.

OPERATING PROCEDURES

The Division of Plant Operations is responsible for the operation of the entire water pollution control system which includes sewers, pumping station and waste stabilization pond. In view of the size of the project, an arrangement was agreed upon whereby the Village of New Hamburg performs the daily operating duties. The Operations Engineer supervises the overall operation of the project and the operator reports directly to him. During 1964, Mr. W. Eichler carried

out the operational duties at the pumping station and waste stabilization pond.

WASTE STABILIZATION POND OPERATION

The 1964 waste stabilization pond operating results are appended in Appendices A and B.

Throughout the year, 36.382 million gallons of sewage were treated in the waste stabilization pond. The average daily flow throughout the year was 99,677 Imperial gallons.

The pond was operated at a depth of three feet until November 9, 1964, when lowering of the pond level commenced. The pond was drained until the depth reached one foot on December 4, 1964. Effluent was not allowed to escape from the pond for the remainder of the year with the exception of the small volume of leakage usually associated with stop log weirs.

The average raw sewage, BOD and suspended solids from the grab samples obtained were 934 ppm and 436 ppm respectively. The average BOD and suspended solids in the effluent also obtained from grab samples were 68 ppm and 71 ppm respectively. From June to November, the BOD in the effluent samples did not exceed 34 ppm.

ANNUAL OPERATING COSTS

The 1964 operating costs and the total 1964 costs to finance and operate the water pollution control system are appended in Appendices C and D respectively. In addition, the operating and total costs are represented diagrammatically

on a percentage basis in Appendix E.

The total cost to the municipality during 1964 was $23,667.66. This expenditure includes operating, debt retirement, reserve for contingency and interest costs. Based on the 1964 assessed population of 2,215 the total annual per capita cost was $10.69.

The 1964 operating cost was $1,006.38. This figure does not includes casual payroll for inspections of the system by the operator. The operator is a Village employee and his salary for inspection is assumed directly by the Village. Therefore, in order to arrive at more realistic cost data for comparison purposes the sum of $800 for casual payroll shall be added to the operating costs. The 1964 operating cost would then be $1,806 and the operating cost per capita per year would be $0.82. These operating costs compare very favourably with operating costs of similar water pollution control systems.

1964 OPERATING REVIEW

Both pumps continued to vibrate excessively throughout the year when operating. To correct this problem, arrangements were made with Babcock-Wilcox and Goldie-McCulloch, Limited, to replace both pumps at very reasonable terms. It is expected that these new pumps will be installed in 1965.

With exception of the pump vibration problem, operation of the system passed without incident.

A P P E N D I C E S

APPENDIX A

1964 OPERATING RESULTS

MONTH	TOTAL MONTHLY FLOW (MG)	AVG. DAILY FLOW (IG)	RAW SEWAGE		FINAL EFFLUENT	
			BOD (PPM)	SS (PPM)	BOD (PPM)	SS (PPM)
JANUARY	2.480	80,000	160	251		
FEBRUARY	2.509	86,500	660	340		
MARCH	4.030	130,000	225	228	104	62
APRIL	4.020	134,000	5100	554	165	56
MAY	3.410	110,000				
JUNE	2.580	86,000	380	264	28	110
JULY	2.895	93,400	800	868	25	64
AUGUST	3.193	103,000				
SEPT.	2.910	97,000				
OCT.	2.480	80,000	320	328	34	55
NOV.	2.400	80,000	320	706	29	79
DEC.	3.475	112,000	440	392	94	73
TOTAL	36.382					
AVERAGE	3.032		934	436	68	71

NOTE:

BOD - Biochemical Oxygen Demand
S.S. - Suspended Solids
PPM - Parts Per Million
MG - Million Imperial Gallons
IG - Imperial Gallons

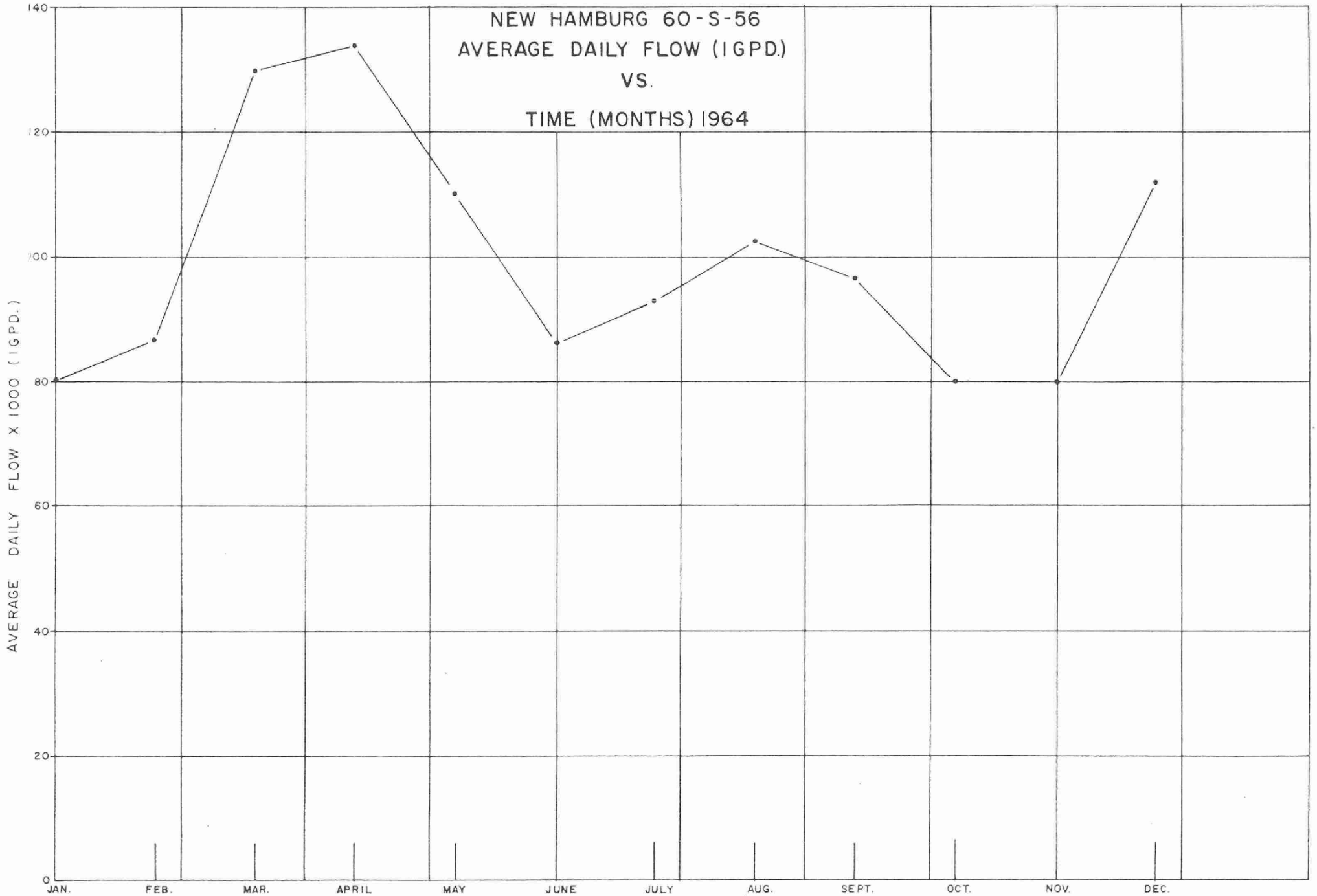
Results obtained from grab samples.

The sewage flow was computed from the pump running time multiplied by the pump capacity.

The pond depth was maintained at three feet.

The average daily flow was 99,677 Imperial gallons.

APPENDIX B


NEW HAMBURG 60-S-56
AVERAGE DAILY FLOW (IGPD.)
VS.
TIME (MONTHS) 1964
AVERAGE DAILY FLOW X 1000 (IGPD.)
140
120
100
80
60
40
20
0
JAN.
FEB.
MAR.
APRIL
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.

APPENDIX C

1964 OPERATING COSTS

MONTH	TOTAL EXPENDITURE	POWER	REPAIRS AND MAINTENANCE	SUNDRY
JANUARY	66	60	3	3
FEBRUARY	63	59		4
MARCH	92	67		25
APRIL	86	82		4
MAY	87	83		4
JUNE	71	71		
JULY	163	68		95
AUG.	67	63		4
SEPT.	72	68		4
OCT.	71	57		14
NOV.	53	53		
DEC.	115	101		14
TOTAL	1006	832	3	171

YEAR	MG TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER CAPITA PER YEAR	COST PER TON BOD REMOVED
1963	20.150	$ 942	$ 46.90	$ 0.44	$32.00
1964	36.382	1006	27.65	0.45*	6.35

* Based on assessed population of 2,215.

APPENDIX D

TOTAL 1964 COSTS

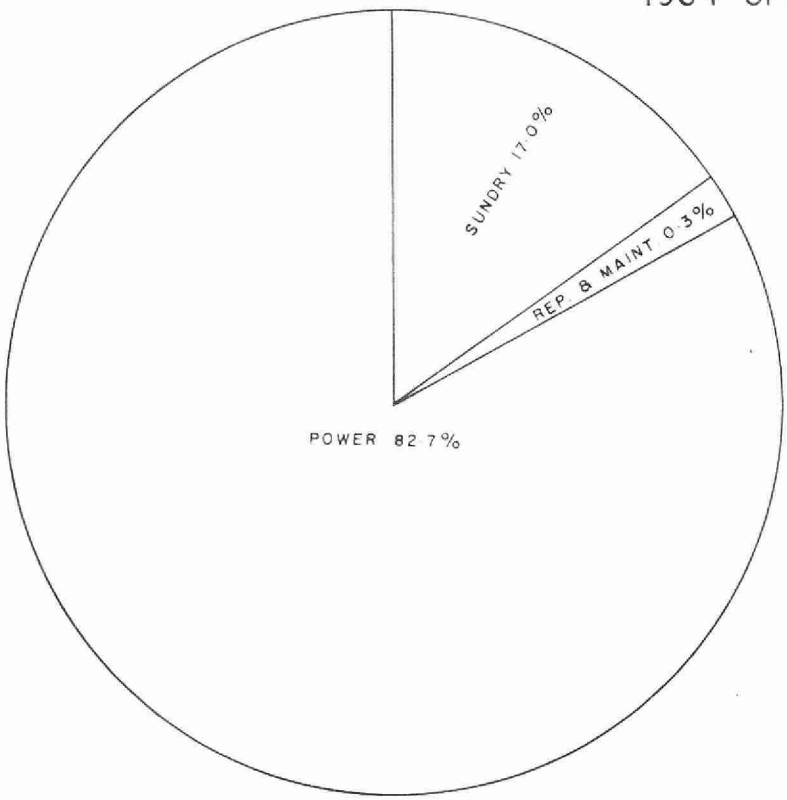
The total cost to the municipality during 1964 was as follows:

Operating Costs	$ 1,006.38
Debt Retirement	5,191.00
Reserve for Contingency	3,005.00
Interest	14,465.28
TOTAL	$ 23,667.66

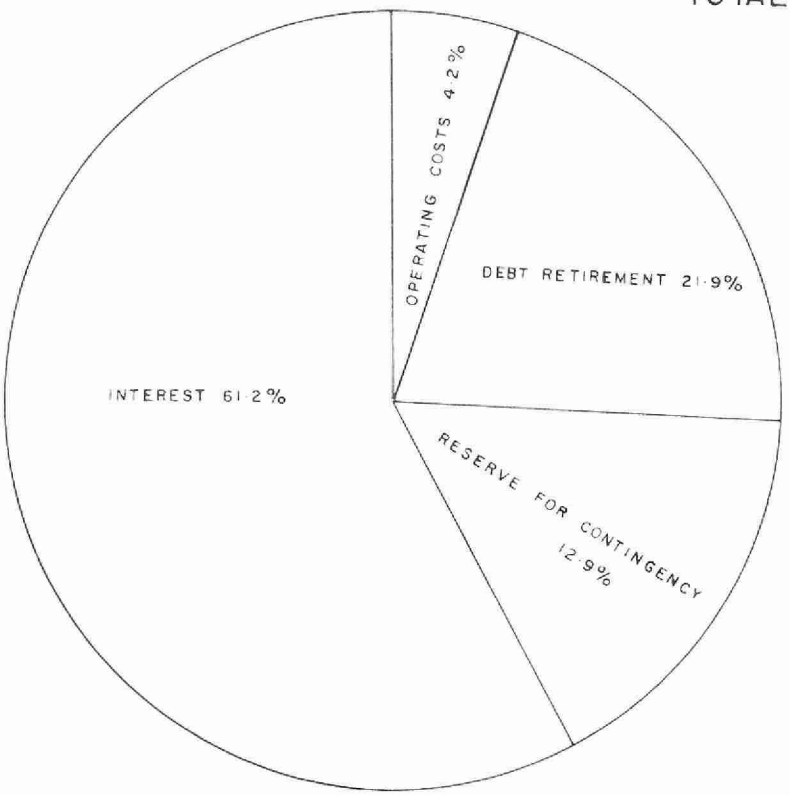
NOTE: The amount in the Reserve for Contingencies as of December 31, 1964, was $6,482.76.

On the basis of the 1964 assessed population of 2,215, the total annual cost of the New Hamburg Water Pollution Control System was $10.69 per person.

1964 OPERATING COSTS



TOTAL ANNUAL COST



APPENDIX F

DESIGN DATA

PUMPING STATION

(a)	Number of stations	1
(b)	Type	Babcock-Wilcox & Goldie-McCulloch prefabricated underground station.
(c)	Pump capacities	No. 1 - 630 IGPM No. 2 - 660 IGPM Both - 810 IGPM
(d)	Motors	30 HP
(e)	Pump RPM	1750
(f)	Location	Jacob St. & Bleam's Road

NOTE:

These pumps will be replaced in the near future with pumps operating at 1150 RPM.

WASTE STABILIZATION POND

(a)	Area	14 acres
(b)	Area Criterion	One acre/100 persons
(c)	Design Population	Village - 1150 Cheese factory - 250 Total - 1400
(d)	Design BOD loading	20 lbs/acre/day

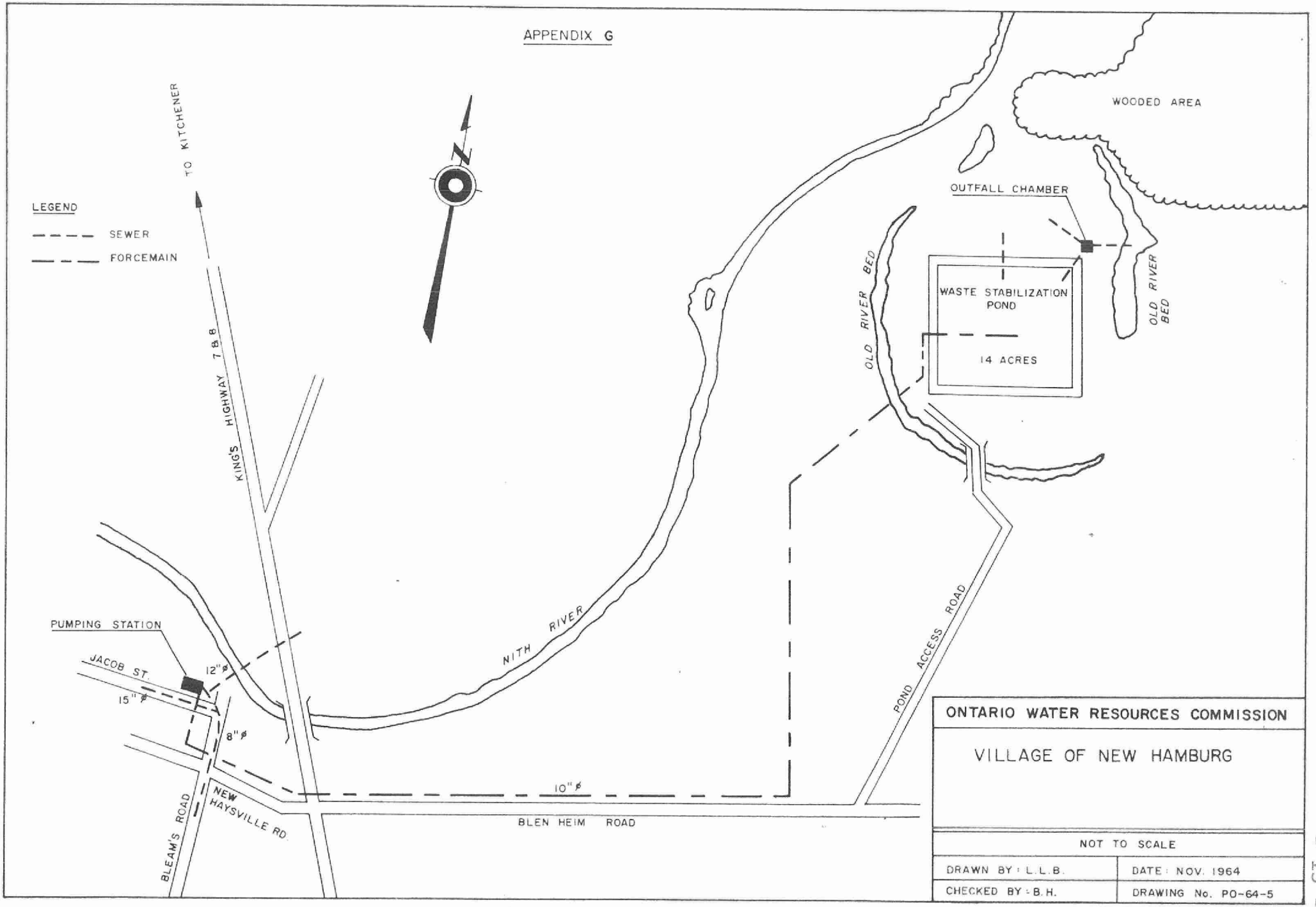
NOTE:

Concentrations of BOD and suspended solids and flow rates were not considered directly in the design.

SEWERS

(a)	Sanitary	
	Diameter variance	8 to 18 inches
	Linear feet	27,000
(b)	Forcemain	
	Diameter	10 inches
	Linear feet	10,000
	Material	Transite

APPENDIX G



ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF NEW HAMBURG

NOT TO SCALE	
DRAWN BY : L.L.B.	DATE : NOV. 1964
CHECKED BY : B.H.	DRAWING No. PO-64-5